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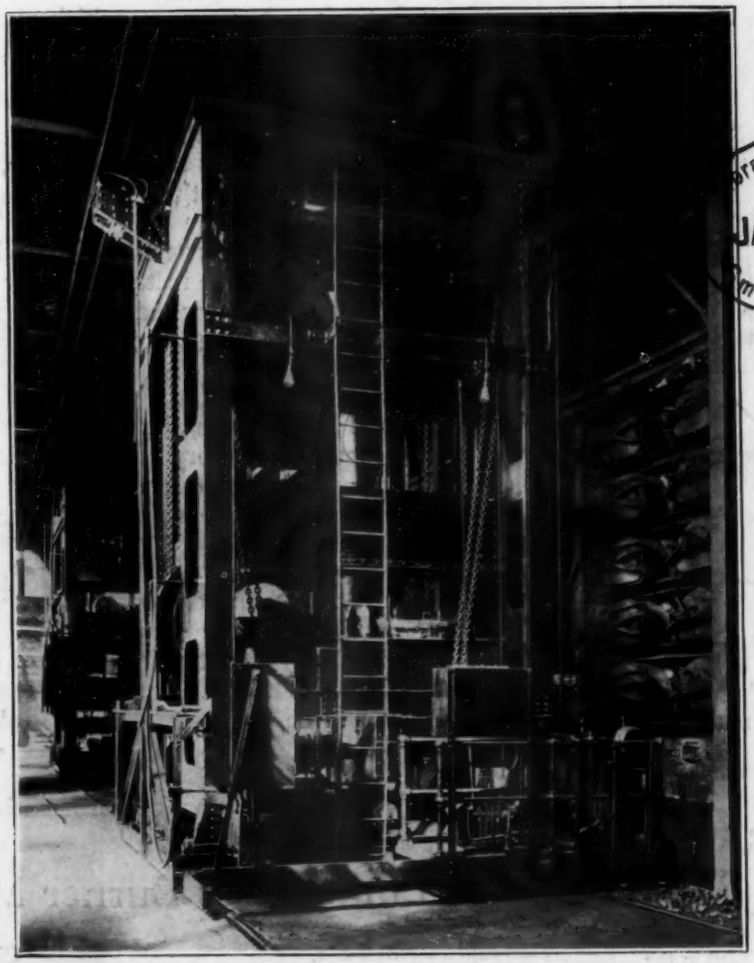
DE BROWER COMBINED CHARGING AND DISCHARGING MACHINE



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Engineers and Founders

BALTIMORE **NEW YORK**

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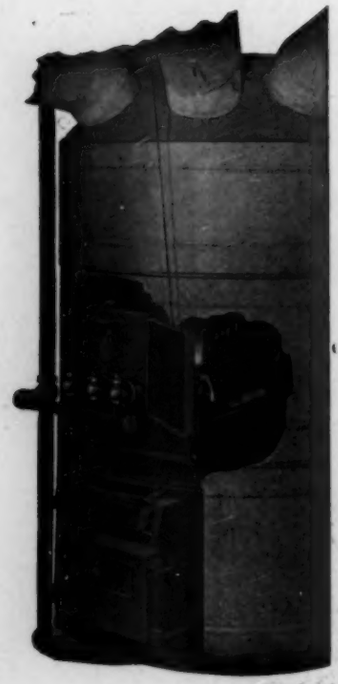
FRANKLIN *Quick Removable* GAS BURNERS

The Gas Man's Big Opportunity



The Franklin Quick Removable Gas Burner System, as illustrated, is an auxiliary heating appliance for use on coal furnaces and boilers.

It can be easily attached in a few minutes' time. Equipped with a swinging stop cock which makes a leak-proof installation when the burners are in use, and a complete shut-off when the burners are swung out of the way.

Venturi Tubes are used in the burners. Economy and perfect combustion are possible under any and all conditions without air mixer regulation. Varying gas pressures will not affect the burner, cause it to backfire in the mixer, or go out under low pressure.

At the present moment, while miners and operators are still haggling over the settlement of the coal strike with anthracite becoming scarcer and prices of $25 a ton and upward prevailing, is the one big chance, which may never come again, for the introduction of gas heating into the home.

The public is tired and disgusted with their dependence on coal, bituminous as well as anthracite, for heating purposes and will gladly welcome gas as a substitute, provided the appliance for burning it is not too costly.

Here, then, is your big opportunity. Franklin Quick-Removable Gas Burners can be installed in any existing type of hot water, steam boiler, or warm air furnace, without extensive alterations to these systems.

The Franklin System permits the use of coal, when obtainable, or coal and gas, or straight gas, as desired. Therefore, it is the most satisfactory and economical method of house-heating extant and overcomes the most serious objections to the use of gas-burning appliances for heating purposes.

We have a most convincing demonstration set, showing in detail the working of the Franklin Quick-Removable Burner System that will not fail to attract the admiring attention of the householder. Run a demonstration for a week and you will be surprised at the splendid results obtained.

Write *today* for full information.

Franklin Gas Burner Mfg. Co.

Vine and Mitchell Sts. **Cincinnati, Ohio**

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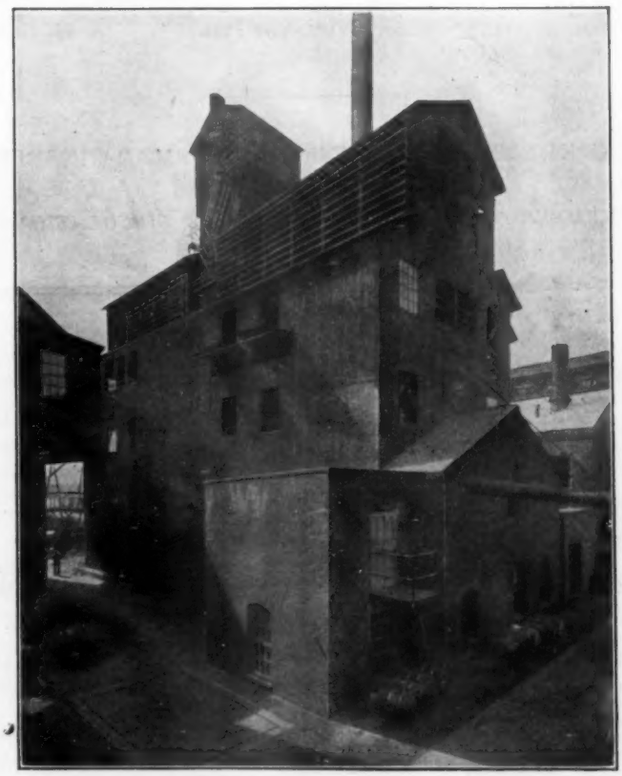

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SIXTY-SEVENTH YEAR

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"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"

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GAS JOURNAL

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Gas in the Gear Industry

Gas displaces oil in gear manufacture and heat treatment

Ralph L. Manier

Industrial Heat Engineer, the Syracuse Lighting Company, Inc.

HEAT plays an important part in the manufacture of automobile gears.

The first step in the fabrication of the gear is the forming of the gear blank. In the majority of cases the blank is forged out of bar stock at a forge shop and the material enters the gear plant forged to the approximate shape and size desired. It may have the original forging scale upon the material or this may have been removed by pickling at the forge shop.

The next step is the so-called normalizing of the material. During the forging operations certain strains are set up in the iron. If these strains are allowed to remain in the stock and the piece machined, the strains may relieve themselves when the final heat treating is being performed and so cause the finished gear to warp so that it becomes so far removed from its proper true engineering development that it cannot be used. This causes loss of money in stock, machining, handling and production.

The Normalizing Process

In the past, normalizing was carried on in oil-fired oven furnaces. The work was packed in boxes in the presence of some carbonaceous material and the box covered and luted to keep out oxygen, which is practically always present in an oil-fired furnace, and will attack the iron or steel. The boxes and their contents were then placed in the furnace and heated to a certain temperature, which was determined by the composition of the stock in question and its expected future heat treatment. After being held at the proper temperature long enough to relieve the stresses in the forging, the parts were allowed to cool. The cycle resembles annealing except that the carbon content is so low that there is practically no change in the composition of the material, and the cycle requires much less time. For the most part the gear blanks have such a low carbon content that the material will not harden if heat treated.

Normalizing with Gas

Today the gear blanks are normalized as shown in photograph No. 1, in a continuous gas-fired, thermostatically controlled furnace, at the New Process Gear Company, one of the most progressive concerns in the country. Gear blanks are placed on cast iron plates and a motor-driven gear reduction train, driving an eccentric, causes an arm to push the plate ahead at a given time. The work enters a heating zone, where it is brought up to the desired temperature and allowed to soak. As other plates are pushed in, those ahead are pushed beyond the heating zone and by the time they reach the end of the furnace are cool enough to be rolled down a conveyor to wooden containers, ready for the next step in production. By the ability of high pressure gas one valve control to maintain at all times during heat and soak a reducing atmosphere free from oxygen, it is not necessary to pack the work in containers. This eliminates the labor required with the old method, reduces the weight to be heated by from one-half to two-thirds, and greatly increases production per square foot of floor space. One furnace with one man per shift can easily turn out 24 tons of normalized gear blanks in 24 hours. Each blank is also assured of having the same treatment as any other, due to the uniform rate of travel and the thermostatic control of temperature. The saving in the

normalizing plant, plus saving in machining due to proper uniform machinability of the blanks, makes gas at practically any price a direct competitor of oil for this work. More recent normalizing furnaces utilize the products of combustion from the heating zone to preheat the incoming work.

After being normalized, the blanks are ready for machining if they have been cleaned of scale prior to normalizing. If the forging scale had not been removed, the blanks would be cleaned by tumbling and then machined.

Further Heat Treatment

After the blanks have been machined and inspected they are ready for further heat treating. If the gear is of low carbon content or low carbon

Heat Treating Gas Fired Furnace for Gears

with certain alloys, the next step is carburizing or case hardening. Here the work is packed in boxes, each piece thoroughly surrounded by an active carbonaceous material. A cover is placed on the box so as to maintain a slight pressure condition within the pot when the heat causes the carbon gases to be formed. The boxes are then placed in a gas furnace, fired below and above the hearth, with burners supplied with high pressure gas, surface combustion control, as shown in photograph No. 2.

The furnace is carried at the proper carburizing temperature for the given stock until parts are uniformly heated through, and the carbon has penetrated the surface of the gear to the desired depth of case. This penetration of carbon and the chemical union with the steel give the equivalent of a high carbon steel gear when finished, so far as hardness and wearing qualities are concerned, but leave the interior of the gear with the strength and toughness of low carbon steel. The depth of case is determined by removing a so-called test piece from a pot, quenching in water, and fracturing. The carburized surface is very distinct as compared with the core and is measured for depth with a gauge. The depth will range from .015" to .060", depending on the service the part is to perform. Parts of the surface which are not to be carburized are copper plated before packing. The carbon will not penetrate through the copper plate.

Advantages of Gas for Process

The advantage of gas for this process is its ability to hold extremely uniform temperatures throughout the furnace, with the desired furnace atmosphere. Uniform temperatures insure that every piece case hardened will have exactly the proper depth of case, regardless of location in pot or furnace. The advantage of fixed furnace atmosphere is longer life of containers and better working conditions. It is interesting to note that when the furnaces were set at perfect combustion, with flue gas analysis of 16.6 per cent CO_2, 0.0 per cent O_2 and 0.0 per cent CO, a great deal of gas from the carbonizing material would burn outside of the furnace when the box luting broke, letting the gas out into the furnace. To avoid this bad working condition and to utilize the heat in these gases, the burners were given enough excess air to just consume them. This proved to require 0.4 per cent O_2 in the flue gases when the furnace was empty.

When the proper depth of case has been obtained, the boxes are removed from the furnace and the gears allowed to cool in the boxes or quenched in oil, depending on the future use and nature of stock.

If the stock is quenched from the pot, it is reheated to give the proper structure, is quenched and then drawn to give the desired hardness of surface. If the stock is cooled in the pot, it is hardened and quenched, reheated and then drawn.

Reheating and Hardening

In the former days most of the reheating and hardening was done in oven furnaces. Today the tendency seems to be to use some molten salt solution with enough cyanide to avoid decarbonization of the surface, or molten lead. The advantage of the molten salt is that, after treating and washing in a hot soda solution, the gear is clean enough to be assembled without further handling, while the lead may stick to the parts, causing the necessity of wire brushing, which is expensive. The salt re-

Gas Fired Automatic Controlled Gear Normalizing Furnace

quires more fuel than the lead, due to the high rate of heat transfer from the surface, which is avoided in the case of lead by the surface covering of charcoal, which serves the treble purpose of protecting the lead from oxidation, keeping the lead from sticking to the metal and insulating the lead bath from the surrounding air. The sales seem to have a more or less destructive action on the furnace lining life if allowed to get on the brickwork. If the cyanide

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Educating the Present Employee*

Trained employees most important asset of gas company

Bernard J. Mullaney

Chairman Committee on Education of Gas Company Employees

FACTS have been developed within the year which strikingly emphasize the importance of this subject—Educating the Present Employee—not theories, not assumptions, not inferences, not guesses evolved from "intuitive understanding of human nature," whatever that is, but Facts.

They were developed in a series of studies made for a group of public utility companeis which included the Peoples Gas Light and Coke Company of Chicago, and were corroborated by similar studies elsewhere. The primary objective was to test and measure customer-attitude, to find out what customers in the mass (the public) thought of the companies and their respective services. The secondary but equally important objective was to find out why customers thought as they did, to get at the factors which determined their friendliness or unfriendliness.

Study of Gas Service

Pursuit of these objectives led logically to study of the service itself and the tangible character or quality of it. This led in turn to study of the manner of rendering service—the character of personal contacts between customers and the employees engaged in rendering service—since the character of these contacts might obviously color the customer's estimate of the service itself. This again led to study of employee-attitude—company organization morale—since the employee's attitude toward his company and his job might obviously affect the character of his personal contacts with customers.

A mention of how the study of customer-attitude was made will indicate the general method pursued in all of the studies. A representative cross section of the community was taken—several thousand typical customers. Trained interviewers called on these customers and put to them a series of carefully worked out questions. The answers were analyzed and tabulated and the results rated according to a definite scale. In a word, the method was an adaptation of tested and approved practice in similar research work.

Much Depends on Ourselves

The results thus obtained emphasize how much public opinion—what our customers think of us—depends upon ourselves as companies rather than upon the adventitious influence of newspaper criticism, politics, State regulation or other external circumstances. The results also emphasize how the making of public opinion is influenced by the rank and file of employees, through whom companies have their personal contacts with customers.

Only about 20 per cent of customers have any conception that there is such a thing as regulation, by the State or otherwise; only that small number have any idea that they can appeal to authority other than the company itself in case of dissatisfaction or dispute. The other 80 per cent look only to the company for attention to their needs, their grievances or other incidents of service. These percentages hold good wherever such studies have been made—in other cities as well as Chicago.

The Customer-Attitude

To get a concrete application of customer-attitude, the customers interviewed—upwards of 15,000 in Chicago—were given a chance to express themselves on private ownership vs. public ownership of public utilities. The responses furnished a very close forecast of the vote on public ownership in the whole city at a subsequent election. But, for us, the significant fact was that the results of the private vs. public ownership test practically paralleled the results of the customer-attitude test: the number of customers who were friendly to the companies was about the same as the number who preferred private ownership.

In testing attitude on private vs. public ownership the customers were asked to state which among five main factors influenced their attitude. These test-factors were: service, cost of service (or rates), influences of organizations (labor or other) to which they might belong, stock ownership in the companies, and newspapers. The relative influence of these factors, as affecting customer-attitude, is thought-provoking.

"Service" came first as an attitude-influencing factor, and "stock ownership" (affirming the wisdom of customer-ownership policies) was second. But "service" was nearly three times as strong as "stock ownership," the next strongest factor. It was almost as strong as the other four factors combined. It is also interesting to note that the weakest factors were "cost" (rates) and "newspapers." In other words, when service is satisfactory, rates are not much fussed about and what the newspapers say about us doesn't matter much.

Educating the Present Employee

Now for the significance of "educating the present employee" as affecting public opinion or customer-attitude, which as we have seen is so largely determined by the character of service.

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*Presented at the Thursday meeting of the General Session, A. G. A. Convention, Atlantic City, N. J., October 15, 1925.

The factors which determine the customer's estimate of our service—whether good or bad or in between—were analyzed and rated as in the test of attitude private vs. public ownership. In this analysis and rating it was found that the impression left by personal contacts with employees was twice as strong as all other factors combined in determining the customer's estimate of the service. In other words, the impression left by contacts with meter readers, collectors, fitters, telephone clerks, correspondents, counter clerks, receivers, and so on, was twice as important as the promptness, dependability, efficiency and all around physical quality of the service itself.

Time limitations forbid going into the details of analyzing and rating morale in the working organization, the influence of morale upon the character of personal contacts between employees and customers, and so on. But certain inescapable conclusions deserve a word of re-emphasis.

What the customers think of a public utility company—public good will—depends overwhelmingly upon the character or quality of the service rendered. But what the customers think of the quality of that service—whether good or bad—depends overwhelmingly upon the impressions derived from personal contacts with the company through its employees. In other words, personal contact impressions outweigh, in the customer's mind, the quality of the service itself.

Employee-Attitude Toward Company

Employee-attitude toward the company and his job—his satisfaction or dissatisfaction with them—is by far the greatest factor in determining whether his contacts with customers leave a favorable or an unfavorable impression. But—and this reservation is significant—good employee-attitude, a high state of organization morale, does not automatically produce correspondingly favorable impressions upon customers.

When the quality-rating of your service is high, say 85 or 90 in a scale of 100, and your employee-morale rating is equally high, customer-attitude ought to be correspondingly high. But it does not always, nor necessarily, work out that way. The customer-attitude may be disappointingly less favorable than the quality of service and the employee-morale would lead you to expect.

This happens when employees have had no direct stimulation and education in the details of rendering service. Every one of them may be loyal and enthusiastic and be doing the best he knows how in his personal contacts with customers. But—the best he knows how—there's the rub. Some little thing intrudes—an unfortunate trick of expression, a mannerism, a lack of information, some lapse of which he is unconscious—and the customer gets a bad impression, of the company and its service in toto, although the tangible physical service itself may be perfect.

Bad Impressions Multiplied

The bad effects of such incidents are obvious when the number of contact-employees is multiplied by the number of their customer-contacts; (obvious, that is, if it has been made clear that customer-attitude is largely influenced by service and that judgment of service is largely influenced by personal contacts had in receiving service). But how to prevent those bad effects? Systematic education of employees in the details of rendering service would seem to be the logical way.

It may appar far fetched to suggest instructing employees in the question-and-answer details of collecting bills, of handling a "high bill" kicker, of responding to a request for information or taking an application for service, of conversation with a housewife when connecting a gas range, and so on. The suggestion isn't far fetched if the job is worth doing. The studies mentioned herein show the job to be well worth doing and the doing of it will not be so very hard, if attacked sensibly. Most big things are done by doing many little things one at a time.

Examples of Results of Education

Some examples of what can be done in this field—since they have been done—may be interesting.

How employees may improve in courtesy and information under systematic instruction, and so improve the quality of employee-contacts with customers was proved by curve recording the results of seven consecutive tests after systematic instruction was begun in a certain company. The rating before instruction was 32.5 per cent; the seventh test gave a rating of 84 per cent.

But improvement was not at the same rate in all departments. Before systematic instruction was begun nine distinct divisions of the service were tested and graded.

The divisional ratings then ran from 15 per cent for Division A to about 52 for Division I. Then systematic instruction was begun and each division was periodically tested and regraded. On the fourth consecutive test Division F, fourth on the first test, rose to first place on the fourth test, 85 per cent—indicating the human element: instruction was better applied or more easily assimilated in some divisions than in others.

The poorest of the nine divisions had improved from a rating of 14 per cent to one of 52 per cent.

As to the effect of this instruction upon the individual employee: a rather backward one improved from a rating of zero on the first test to one of 100 per cent on the sixth test.

These facts and conclusions impinge directly upon the work of your Committee on Education of Gas Company Employees. The committee's work has not yet reached the field of the studies which have been referred to, but is approaching it—is, indeed, at the edge of it.

Lack of Information Important

These studies have shown that lack of information by an employee, when he is in service-contact with a customer, is an emphatically unfavorable factor. The utmost in courtesy, in good appearance, in

(Continued on page 52)

Regulation by Public Service Commissions *

A discussion of the functions and development of commission control of utilities

Alexander Forward

Secretary-Manager, American Gas Association

REGULATION of the rates, service, securities and accounting of corporations engaged in the service of the public is a well established factor in American organization. Criticisms of the method are now infrequently heard and such weaknesses as exist are inherent, not in regulation, but in democracy itself, and it fails only to the extent that the appointing power or the individual citizen fails in the discharge of his civic duties.

Government Regulation

Governmental regulation is by no means a new thing. In the middle ages there was a very great deal of it. The lawyers tell us of cases which show that, for instance, in 1460 a judge said that under the law a dealer in provisions who declined to sell a customer would be liable for damages; the blacksmiths were similarly required to serve all comers, and those who set themselves up as common carriers were obliged to transport the commodities offered when tendered the proper hire. Arbitrary and excessive charges by public wharves were prohibited and wharves and cranes were declared to have a public interest. Although not designated as public utilities, for that term was not then known, its precise meaning was attached to the surgeon, the tailor, the blacksmith, the victualler, the carrier, the innkeeper, the ferryman, the wharfinger and others.

So it was not unnatural that when there came to be a feeling on the part of the public that patrons of railroads were being compelled to pay dividends on watered stock, that properties were being operated for private gain, that railroads were very much in politics and secured concessions and legislation by means that were shady, and that the accounts of these great public servants were juggled and falsified, there came a demand for a certain amount of restrictive procedure. Further, it was not at all unnatural that this first took the form of legislation. Some states undertook to fix rates by law and others adopted freight classifications by statute. Passenger fares were in some instances prescribed by the action of law-making bodies. It was not long before this mistake became self evident. A legislature is not equipped for determining the facts upon which a rate or a classification should be based. It is most likely to be done upon the passion of the moment or perhaps as a result of improper influences. Many municipalities tried the same thing. It became a common practice on the part of the city councillors in granting term franchises to public utilities, notably street railways, as well as gas, electric and water enterprises, to fix a rate for the service and in some instances they took the form of a maximum rate. In some cases these grants were quite valuable to the utility but in later years, for reasons which I shall try to explain, they proved exceedingly unfortunate for all concerned and have been the cause of no end of trouble.

Regulation by Commission

Finding by experiment that it is as dangerous to legislate for the shippers as for the railroads and for the consumer as for the utility, attention was turned to regulation by commission. The manifest absurdity of attempting to make rates and service by law and the unsatisfactory relations between the municipalities and their public utilities had most to do with the change that took place. The officers of the municipalities lack the technical training essential either to protect the public interest or to deal justice to the utility. As one able jurist has expressed it, "whether the relations between the municipality and the utility company were that of open war or supine acquiescence on the part of the city to the demands of the company, mattered little to the consumer. Unreasonable demands made by the city as a result of a lack of information concerning the public utility business were as fruitless of just results as meek submission to the ultimatums of the utility. The situation resulted neither in justice to the consumer nor stable business conditions to the utility."

Establishment of State Public Service Commissions

In the early days of the present century, most of the State Commissions were established. In the public mind the prime reason for their creation was reduction of freight rates and passenger fares, for the public felt that such action was demanded. Pretty generally the commissions reduced passenger fares and in very many cases made large reductions in freight charges. As the years have gone by some commissions have been abolished, but in every instance others under a somewhat similar name have been created. In some cases, as in Virginia, the commission is provided for by the constitution of the State, which happened to be rewritten at the time commissions were coming into being. When unpopular decisions have been rendered there have been investigations by legislative committees on the affairs of commissions, and in every case the commission has been upheld and its prestige increased rather than diminished.

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*Delivered as a lecture before the School of Commerce, Temple University, Philadelphia, Pa.

The Staff of the Commission

In order adequately to perform their regulatory functions, the commissions are authorized to conduct investigations, hold hearings and issue orders. Generally they have a staff of engineering, statistical and accounting experts to assist them. They are authorized to appoint examiners, take depositions, and issue subpoenas. They may establish systems of accounts and require reports from the utilities, and the utility's books must be kept in accordance with the system of accounts established by the commission.

Hearings on any matters involving rates, practices or service may be either upon the motion of the commission or upon complaint by civic bodies, municipalities, consumers or the utility, and in most cases the orders issued by the commission become binding unless set aside by the courts.

All utilities are required to file their rate schedules with the commissions, and generally it is provided that no rates may be charged except those so filed.

The number of commissioners varies in different states, one state having only one commissioner, most states having three, and some having five or more. The commissioners usually are appointed by the Governor. In some cases they are elected.

Jurisdiction of Public Service Commissions

All the states except Delaware have commissions and so has the District of Columbia. Their jurisdiction varies to a considerable degree and the laws under which they operate vary still more. Ten of the commissions, while having jurisdiction over the steam railways, and usually over interurban electric railways, and sometimes over telephone and telegraph companies, have as yet no control over the rates and charges of gas, electric and water companies. Otherwise, all commissions regulate the rates and service of all utilities. The development of jurisdiction of commissions has been gradual and it is the usual thing that every legislative session witnesses some addition to the duties imposed. Regulation of motor transportation is now becoming general. When a utility desires to revise or increase its rates it files a revised tariff, effective, say, thirty days from date of filing. If protests arise from the consumers affected after due publication of the intended change, or if the commission in its own discretion chooses, it may suspend the proposed tariff for a period pending investigation and hearing and then decide what rates shall apply.

Often there is a failure to understand that the function of the utility in rate making has not been abolished by commission regulation but still leaves to the utilities the primary duty and power of rate making and authorizes the commission to establish rates only where they have found after hearing that the utilities in their rate making have failed to comply with the statutory rule that rates shall be just, reasonable and nondiscriminatory.

A Fundamental Right

This right on the part of the utility is fundamental, and its recognition clearly defines the function both of the utility and the regulatory body. The common law right of utilities to make their own rates is subject only to the functions of the commission in seeing that the rates are fair, just and reasonable. Except where the commission finds that this statutory rule has been violated the right of the utilities to make their own rates has not, as a rule, been interfered with by regulation. Regulation was not intended to be managerial in its nature, and this fundamental fact is coming to be more clearly recognized by both courts and commissions.

The real test of commission regulation came as a result of rapidly increasing costs of giving service, proceeding from war and post-war conditions. Utilities found themselves confronted with rapidly mounting costs of supplies of all kinds and of labor. Their rates were on file. Immediate relief was essential if they were to continue to serve the public. Many of them struggled along disinclined to do anything to hamper the supreme effort put forth by the nation to win the war. Others were compelled to ask for higher rates to keep going. For the most part, however, the principal fights came after the Armistice.

Commercial enterprises were easily able to weather the storm. The public knew that the cost of everything they produced or sold had gone up enormously and we all paid with higher prices for food and clothing with little demur. But the utilities were unable to make their selling prices follow the trend of costs and were, therefore, prevented from accumulating surplus of profits possible to the far-seeing industrial and commercial executive.

Effects of War

Unfortunately, immediately after the war many public utilities were thrown into receiverships and this was notably the case with the electric railways. The steam railroads were taken over for the war by the Government, which increased the rates and guaranteed to the stockholders the average return of the immediately preceding years.

Financing

Another phase of regulation which is now regarded as most important is in the matter of financing. Unless a utility can earn sufficient return to maintain its credit in financial markets so that it may borrow money when needed, it cannot properly keep up with the demands of the times. No one who has a dollar will allow it to be used without a return and the elements of safety and earning capacity are essential before the lender will purchase the securities of the utility. Good service is worth all it costs and poor service is extravagant at any price, no matter how small. Unless a utility is furnishing the

(Continued on page 56)

Fine! Let's Start Selling

There is no time like the present to plan

William H. Matlock

NOW that you have laid away your surplus neckwear and piled up the picture postcards received from those you failed to remember, and followed with a New Year's greeting, let's give a thought to selling again!

The idea of a "Free Trial" is not a new one, but it is a very good one, and January, when a fellow is just getting back to financial "normalcy," seems a most appropriate time to put on a "Free Trial" sale. This sale may be built around water heaters or ranges. Install the appliance on "Free Trial" for 15 to 30 days. Most water heater sales plans, however, contain too short a period, to our way of thinking. Fifteen days is, or has been, the usual period. This, it seems, is too short a time to enable the customer to give the appliance a thorough trial,

This man says sales are the work of slicker sales managers to push off manufacturers' goods

and again the installation expense incurred is too great for such a short demonstration. Of course, it may be said, "Well, they do not have to be taken out." True enough, but not in all cases. Anyhow, we like always to include that factor of safety and therefore suggest that the period be run up to 31 days. And why the one, you ask? Oh, well, that is just the psychological day to go with the factor of safety.

But Getting Down to Sales

The 15 day free trial has proven successful in some instances and we do not mean to imply that it has not. The Illinois Light and Power Corporation was very successful in developing water heater sales with such a plan. Our idea is that just a little more time to demonstrate the value and utility of running hot water will create more sales and many people will try it who would hesitate otherwise.

Most of the water heater sales have hit directly at the mark, coming out with four column by 20C lines of newspaper advertising and a flock of direct advertising to open their sales and followed up by smaller advertisements running down to one column by 200 lines. The sale as a rule is in force for one month. In many cities the telephone is used to acquaint old prospects with the facts regarding the sale and to develop new leads for the salesmen. In other cities a trade-in credit of $5 is given for copper or cast iron coil circulating heaters that are turned in.

The "Free Trial" range sale is conducted along different lines. First, the majority of sales offer the range on "Free Trial" for a period of 31 days and, second, the purchaser is given a premium with each purchase; thirdly, no down payment is required at the time the range is installed for trial and the payments are spread over 12 months. Other sales that we have heard of give a trade-in credit of from $5 to $10 on any old gas, coal, wood or oil stove. We know of a company down in South Carolina that gave a credit as high as $25 on electric ranges turned in. The premiums vary, some companies giving 42-piece dinner sets, others a set of aluminum cooking utensils. The most popular, however, seems to be the 12-piece glass baking set. Home managers, notwithstanding all we hear about jazz, and the women in business, are ever alert to keep up with the times when it concerns their workshop.

This man is opposed to home economics

Success Has Attended These Sales

The "Free Trial" sale has been a very successful one wherever used and where the gas company carried through for the full month. The Jacksonville Gas Company, Jacksonville, Florida, is reported to have disposed of over 400 ranges through the use of a "Free Trial" sale in September. "The plan is based on one which is used by large mail order houses of the country and which has been so suc-

(Continued on page 52)

Low Temperature Carbonization of Coal[1]

A discussion of general details and various processes used

A. C. Fieldner[2]

INTRODUCTION

THE subject of low-temperature carbonization of coal does not properly belong to a series of lectures on recognized gas-engineering practice, but rather to the field of gas or fuel-engineering research. At the present time no low-temperature carbonization plant is being operated at a profit, either in America or in Europe. However, many are trying to develop such processes—some honestly on sound scientific and engineering principles, others equally sincere but lacking in technical knowledge, and yet others, unfortunately, who are only interested in selling stock to the unwary investor. It is, therefore, advisable for you as gas and fuel engineers to familiarize yourselves with the objects and principles of low-temperature carbonization, its present development and its future possibilities. In the period of a single lecture I can give only a brief outline of the subject. For further information you are referred to three recent British books[3] and a number of papers[4] in the technical press. However, it must be kept in mind that most of the statements regarding low-temperature carbonization processes in the technical press are written in somewhat optimistic vein, by engineering editors or engineering correspondents who are not thoroughly acquainted, from personal knowledge, with the technical operation of the process, but are necessarily obliged to accept, at their face value, the statements given them by the inventors and promoters of these processes. In this respect Lander and McKay's book is perhaps the most unbiased and scientific treatment of the subject of low-temperature carbonization.

Definition of Low-Temperature Carbonization

Low-temperature carbonization of coal may be defined as the heat treatment of coal in the absence of

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[1]Published with the approval of the Director, U. S. Bureau of Mines.

[2]Superintendent and Supervising Chemist, Pittsburgh Experiment Station, U. S. Bureau of Mines.

[3]McCulloch, Andrew, and Simpkin, Neville, Low-Temperature Carbonization of Bituminous Coal, H. F. & G. Witherby, London, 236 pages, 1923. Wellington, S. N., and Cooper, W. R., Low-Temperature Carbonization. Charles Griffin & Co., Ltd., London, 238 pages, illustrated, 1924.

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[4]Tupholme, C. H. S., Great Britain points the way in low-temperature carbonization; Chem. & Met., vol. 29, No. 4, July 23, 1923.

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(Continued on page 58)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 103

Combustion

Heat Is Generated in Rusting

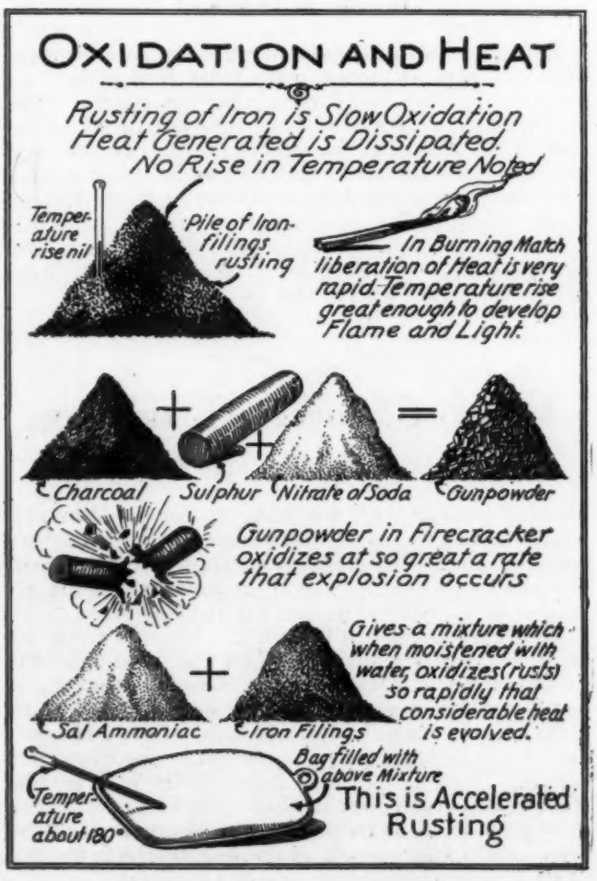
In this case iron rust or oxide of iron is the product of combustion and it is just as much a product of combustion as carbon monoxide or water vapor which is obtained in the burning of carbon or hydrogen fuel. So, when iron rusts slowly, it is actually burning up and if the rusting is allowed to go far enough eventually all of the metal, iron, will be converted into the oxide of iron. Combustion will be complete. Heat is generated during the combustion of iron, or rather during its rusting, and this heat is considerable, but inasmuch as it is generated gradually, over a long period of time, the heat is dissipated and its presence is not manifested.

Evolved During the Process of Rusting

But it is present just the same, for it is a natural law that knows of no exception that states that when a combustible oxidizes or burns, heat will be evolved. The special conditions under which combustion takes place will determine how this heat is manifested. If the combustion is slow, it is not noticed at all. On the other hand, if the combustion is rapid, the presence of heat will be manifested not only by the rise in temperature, but also by the evolution of flame and light. Very rapid combustion, on the other hand, is manifested not only by these phenomena, but also by explosion and great noise. For an explosion is nothing more, in most cases, than an extremely rapid combustion. Thus the ordinary explosive gunpowder, which consists of a mixture in proper proportions of charcoal and graphite, sulphur and nitrate of soda or potash, that is, either ordinary Chili saltpeter or niter, is subjected to very rapid combustion, when it explodes. A great volume of gases of combustion is produced at extremely high temperatures and in their effort to expand they produce an explosive effect, accompanied by great noise.

Accelerated Rusting

An interesting experiment which will show that iron will produce heat when it rusts is to mix a little, about 2 to 3 per cent of sal ammoniac, with the iron filings and then add a little water. In a few seconds the temperature of the mass will be elevated and attain such a height that it will be almost impossible to hold the hand against it. The sal ammoniac simply has the effect of increasing the rate of combustion of the iron to such a degree that the heat is developed within so short a space of time that it cannot all dissipate and hence becomes sensible. Rapidity of oxidation is therefore a prime condition in determining the temperature that is produced in the process. We shall have more to say about ths important subject in connection with the flame tem-


OXIDATION AND HEAT
Rusting of Iron is Slow Oxidation
Heat Generated is Dissipated.
No Rise in Temperature Noted
Temperature rise nil
Pile of Iron Filings rusting
In Burning Match liberation of Heat is very rapid. Temperature rise great enough to develop Flame and Light.
Charcoal
Sulphur
Nitrate of Soda
Gunpowder
Gunpowder in Firecracker oxidizes at so great a rate that explosion occurs
Gives a mixture which when moistened with water, oxidizes (rusts) so rapidly that considerable heat is evolved.
Sal Ammoniac
Iron Filings
Bag filled with above Mixture
Temperature about 180°
This is Accelerated Rusting

perature produced by the combustion of fuels in the industrial furnace.

Thus it has been demonstrated that there are variations of the combustion process and that these variations are due to a difference in the rate of combustion, resulting in all sorts of phenomena, from rusting of iron without any sensible manifestation of heat to the explosion of gunpowder with a tremendous increase in temperature and volume of gases of combustion, so that explosive violence is engendered through the efforts of these gases to expand under the influence of the tremendous heat.

GAS IN THE GEAR INDUSTRY

(Continued from page 44)

salt solution is used, care must be taken to carry away the cyanide fumes, as they are dangerous to the workmen.

The drawing is done either in an air drawing oven or in salt baths.

After drawing to proper temper the gears are inspected and then move on for assembly and shipment.

Oil Entirely Displaced

The success of gas in the plant of the New Process Gear Company is shown in the total displacement of the use of oil as fuel for treating the gears. Four carburizing furnaces and two more pot furnaces are now in use and three more carburizing furnaces and a second normalizing furnace are under construction. The writer believes there is no better heat-treating plant doing similar work.

One hundred per cent perfect production is the aim of every manufacturer today. Gas will help reach that point where heat is required.

EDUCATING THE PRESENT EMPLOYEE

(Continued from page 46)

pleasing address, will not make up for it. When an employee has to say "I don't know" to a customer's question about the company or its service, or when his information is inaccurate or incomplete, the effect on the customer is bad for the company.

Your committee has had all this in mind from the beginning of its work two years ago. Its task was to formulate and inaugurate a definite program of employee education for gas companies, but it had little or no material to work with. Few gas companies have done much in systematic employee education. Those few mostly follow different methods. Your committee's first decision had to be on where to begin. It chose to begin with information on the origin and fundamentals of the gas industry, as well as on the details of every-day gas business.

FINE! LET'S START SELLING

(Continued from page 49)

cessful in bringing their growth to what it is today," said one of the big gas advertising managers. "It is the free trial idea which is responsible for their growth and we are simply applying the plan to the retail selling of gas ranges."

The gas company in many cases has opened this sale with teaser advertisements for from three to six days in advance of the large advertisements announcing their sales.

Gas Companies Bust Be on the Alert

There is not a gas company in the United States that can afford to rest on its oars and think that the domestic load will take care of itself. It is a very vital factor in the future of the industry and no stone should be left unturned until every home manager on the mains is brought to such a state of mind that she is satisfied with nothing less than the newest and best type of gas range and water heater that money will buy. When you think maybe the customer cannot afford it, pause and think of the automobile! How many folks have them that can't afford them or have need for them? Did the automobile companies hold back because they felt folks could not afford cars? We judge they did not! So let's start! Let's give them a Free Trial sale!

If it is done with heat *better* you can do it with gas

Roasting Coffee with Gas. This is but one of the more than a thousand applications of gas to industrial heating. Baking, sealing, drying, rendering, annealing, smelting, firing, smoking, hardening, melting, enameling, etc.; in all these and many other processes, "you can do it better with Gas."

EVERY ticking second of the long day and night your local gasworks, this company, is quietly operating—pushing out into its vast, intricate network of underground mains clean, heat-full fuel. Out of coal it removes the filth, the soot, the ashes, the confusion, the toil—and it releases to the community the soul of coal—gas... clean, dependable, steady, efficient gas; ready for you to turn on as you turn on water from a faucet. No storage, no handling, no expense, no muss—just clean, controlled heat for any operation.

In your plant, there's some process where this clean concentrated fuel can be used to better advantage. Let one of our Industrial Engineers answer your questions.

Call.....

(Your Name and Address Here)

A.G.A. 627

Coffee Roasting—An Important Use for Gas

As The Journal Views It

TRAINING THE SALESMAN

The day has passed when salesmen sold entirely because of their personailty or their peculiar selling ability. In former years the man on the road or the canvasser relied almost entirely upon his skill in overcoming sales resistance through pressure of argument or cajolement. Today merchandise is not sold on such a basis, and if it is the salesman soon finds that his customer will not reorder and, in the end, he will lose business.

It is, of course, true that one who sells should have some selling ability, but it is equally true that almost everybody has and must have, to a certain degree, a capacity for selling himself, his service or his merchandise. It thus follows that the most important detail in the selling end of any business is the proper training and education of the salesman.

The salesman cannot sell and cannot build up a business for himself and his company unless he knows his merchandise, and perhaps nowhere is this condition so accentuated as in the gas field. The salesman in the gas field not only sells the appliance, but he sells the fuel as well. Consequently, not only must he understand the qualities and capacities of his appliances, but he must also have a good working knowledge of the properties of gaseous fuel and advantages that it possesses and the results that can be obtained through its use.

The gas companies of today know well the importance of training their salesmen, and those who are particularly concerned with the sale of domestic appliances. There are many details that these salesmen must have at their finger tips. The more they are familiar with the actual workings of the appliances that they sell, the more satisfied customers will the gas company have and the greater will be its sales of gas. It might appear strange to learn that a gas company has gone so far as to insist that its salesmen learn how actually to operate a gas range, for example. In other words, the company teaches its salesmen how to cook and bake and in this way imparts to them first-hand knowledge on the use and manipulation of a gas range.

But it must be very clear to everyone who studies the matter that a salesman who possesses such knowledge will be able to gain the immediate confidence of a prospective customer and will find no difficulty in selling gas ranges to them. Just picture the effect on the housewife who is in the market for a range to see the salesman who is selling it to her actually use it in a cooking demonstration, or at least be able to explain to her in detail the manner in which to prepare a certain dish or other on the range.

It is just this personal touch, this little detail that determines the difference between successful and unsuccessful merchandising of gas appliances. There are many other important factors in training and educating salesmen that also require proper attention. It must not be thought that merely the ability to demonstrate in a practical manner the operation of the range makes a successful salesman. It must be remembered that this detail is only one of the many that are required in rounding out the training of the salesman to give him the tools that he requires for making sales of gas and gas appliances.

Another feature of the training of gas salesmen which must be emphasized here is that part which depends largely on himself rather than on the company for whom he is working. What is referred to is the time that the salesman sets aside for reading the literature relating to his special field and work. The salesman will find in this literature discussions and descriptions of sales plans, sales campaigns, sales methods and sales arguments, that have been developed by other salesmen and sales managers of other companies and that may well apply to his own individual case. This is the only way in which a salesman can keep in touch with the developments that are taking place all around him. By reading his trade paper every week he will soon find himself well informed on all matters that are of importance or interest to the commercial phase of the gas industry, by attending convention meetings wherever possible and by taking advantage of the opportunities that are offered him in his own company for meeting his fellow employees and discussing with them his successes and failures along common lines, he will be able to round out his training so as to acquire the necessary information to sharpen his wits and keep himself in the proper mental condition which is so necessary for a successful gas salesman.

Prosperity Is Assured

1926 a year of consolidation---higher prices likely

L. W. Alwyn-Schmidt

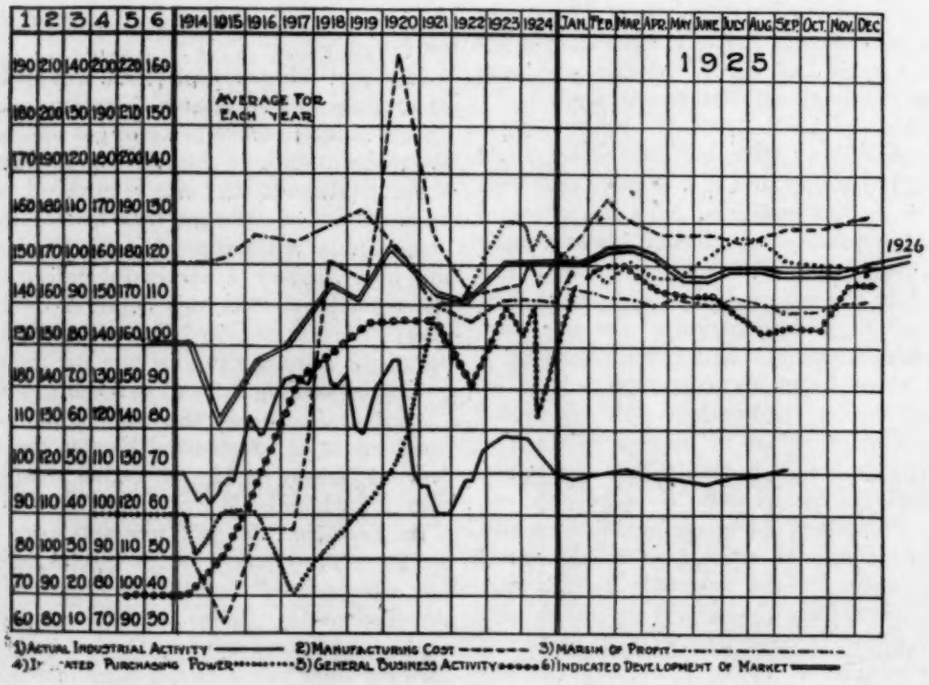
THE month of December made good the promises of November and the year 1925 came to a close with a promise for a further steady improvement of the economic situation during the new year. For all those who had expected a quick and decisive recovery early in 1925, the past year must have proved somewhat of a disappointment; in fact, the beginning of 1925 was everything but prosperous. On the contrary, the short flurry around Christmas, 1924, was followed by an ever-deepening depression, the effect of which had not worn off by the middle of the year. It was only autumn that finally saw the start of a decisive upward movement.

To the close student of market economies this situation cannot have provided any particular surprise. Great economic disturbances like those of the war cannot pass without a succession of minor tremors until the market has found a new point of equalization. In our case, the situation was aggravated by the continued low purchase power of the dollar in the home market, while dollar exchange remained high in many leading foreign markets, creating a very unusual condition in our foreign economic relations.

Rural Purchasing Power Improved

Help came finally from an unsuspected quarter by a sudden improvement of the purchasing power of the rural communities. For the first time again since the boom years of the war prosperity reached the farm. Prices for most farm products are high, with the end apparently not yet in sight, and the farmers are getting ready to remove from their shoulders the burden of debt accumulated during the lean years. The effect of this upon the national markets must be considerable. Its most immediate result has been an increasing flow of merchandise to rural markets, in quantity as well as in variety, and there is every indication for a further growth of the volume of this movement.

Theoretically, this present prosperity of our farms is paid for by the non-farming population. In practice, however, the increase in the cost of living is soon neutralized by the ability of the farmer to consume higher-priced merchandise. This, in turn, provides better earnings for the industrial producer, who, in theory at least, is supposed to be the principal consumer of the products of the farm. The higher cost of living is in this manner counterbalanced by a rise in the industrial earning power, all of which is in harmony with the expectation for a new orientation of our economic life upon a higher level.


1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
1925
AVERAGE FOR EACH YEAR
1926
1) ACTUAL INDUSTRIAL ACTIVITY
2) MANUFACTURING COST
3) MARGIN OF PROFIT
4) INDICATED PURCHASING POWER
5) GENERAL BUSINESS ACTIVITY
6) INDICATED DEVELOPMENT OF MARKET

(Continued on page 57)

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

OCCURRENCE OF IODINE IN WATER GAS

AN interesting note has been published in the German Journal entitled "Chemiker Zeitung," November, 1925, page 925, regarding the presence of iodine in water gas. The author has made the observation that in heating solutions acidified with hydrochloric acid in glass beakers the solution overran and the copper or brass wire gauze that was being heated by the gas flame of the bunsen burner always developed a rather large quantity of red vapors which had an iodine odor. Furthermore, a red sublimate was formed on the outside of the glass beaker. These red vapors were found, on more careful examination, to be vapors of iodine.

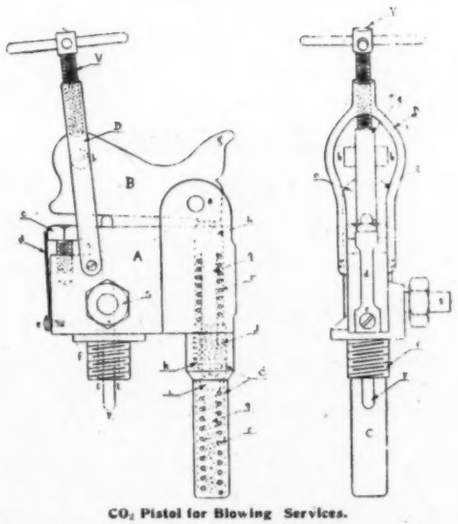
The tests were made with pure hydrochloric acid which was free from iodine, and under conditions which avoided all introduction of material that might contain iodine compounds. It appears, therefore, that the iodine is contained in the gas, which is a mixture of coal gas and water gas, and which in this case was badly purified and developed quite a considerable amount of sulphur dioxide when it was burned. The coal gas itself was made from the gas coal and the water gas from lignite coal. It is possible that the cause of the presence of iodine in the gas is to be found in the use of lignite coal, as iodine is a normal constituent of plant life.

PISTOL FOR BLOWING SERVICE MAINS

THE accompanying illustration shows a device which was designed by a gas engineer in the service of the Marseilles Gas and Electricity Company of France and which has for its purpose the clearing out of service mains.

Details of this apparatus are taken from the Gas Journal, 1925, page 495.

The body of the pistol (A) is connected by means of a screw threaded spigot (f) to a liquid carbonic acid tank. The opening (t) communicates between the tank and the outlet (S). A port (t) makes communication between the magazine and the outlet (S), which is jointed to the service pipe under treatment. A striker (p) is axially placed in the port (t) and carried through the body (A) with a good sliding fit, rendered gas-tight by merely oiling. This striker, which acts on the valve of the gas magazine, can be depressed by a trigger (B) hinged at (a). The trigger is formed with two lateral projections (b) and a pawl extension (g); and impulse is given it through the medium of a double rod (qq^1) and springs (rr^1) in a casing (C) screwed on to an extension (j) solid with (A). The stroke of (p) can be regulated by adjusting the nut (c), which is locked by a flat spring (d). A stirrup (D) mounted upon



CO_2 Pistol for Blowing Services.

the body of the pistol and having an operating screw (V) allows the substitution of steady blowing for shock action in dealing with mere solid obstructions. The shock action is obtained by cocking the pistol by pulling on the projections (b) against the springs (rr^1), which are thereby set; pressure on (g) thereafter causing a sharp emission of gas, which resets the trigger.

THE CORROSIBILITY OF TAR OILS

AN article recently appeared in Das Gas und Wasserfach, volume 68, pages 484 to 485, in which there was described a method for determining the degree of corrosibility of tar oils, as well as the causes of this phenomenon and means that may be used for counteracting it. In the method used for determining this property of tar oils, long spirals of iron wire about 715 millimeters long were heated in a bath of 100 ccm. of oil with 4 per cent water, the operation taking place in a 300 ccm. round bottom flask provided with a reflex condenser, the heating being effected in an oil bath and lasting for two hours in a temperature of 135 degrees C. The loss in weight was then determined and was found to be from 0.6 to 20 milligrams.

The cause of the corrosibility of the tar oils was found to be the presence of ammonium chloride and ammonium sulphide and not to the presence of phenols and other acid oils. The water content of the oil had the effect of increasing its corrosibility. When the oil was boiled out and washed with water the corrosion phenomenon did not take place.

The author warns of the danger of using ammonium salts or magnesium chloride as accelerators for the dehydration of tar oils.

REGULATION BY PUBLIC SERVICE COMMISSIONS

(Continued from page 48)

service it is not doing its duty and it cannot furnish service in our rapidly expanding American life unless it has the money to build extensions and to add to its plant. Sales of securities to customers, a subject also to come before you later, is encouraged by all commissions.

Issuance of Securities

Many of the commissions are given jurisdiction over the issuance of securities by public utility companies and this has come to be regarded as an important feature in regulation. By this means any possible overcapitalization is avoided. As a matter of fact, however, no commission attempts to fix rates based upon the outstanding stock and bonds. Watered stock costs the public nothing nowadays except in so far as it may hamper the utility in borrowing money, so that when any one raises his voice to say that the American public is paying freight rates or electric railway fares or gas or electric or telephone rates upon watered stock, he is merely discussing something that does not exist and is either ignorant himself or takes his hearer to be ignorant.

Accounting

Commissions may prescribe the forms of accounting for public utilities and usually they do so. Under the auspices of the National Association of Railroad and Utilities Commissioners, uniform classifications have been worked out for electric and gas utilities and these have been adopted officially by about half the states and are in use by companies in many other states. This is of immeasurable advantage to everybody. It simplifies the work of the commission because all of the utilities of the class affected report in a similar manner on each item, and the commission has within its files all the necessary information as to the operations of the utility. It is, therefore, of advantage to the public for the utilities' books are not hidden, but every item is brought to light. It is also to the advantage of the utility because it sets forth a standard with which it must conform, and those undertakings which operate in one or more states may make one system of accounting cover the entire field instead of having different regulations and different jurisdictions. As to steam and electric railways, most state commissions use the accounting and report methods of the Interstate Commerce Commission.

"Home Rule"

Considerable discussion and no little feeling has been aroused since the years of the war, by decisions of commissions taking out of the hands of local authorities the regulation of rates and service and investing this regulation in the state body. Successive court decisions have in the main upheld this change. The contract between the municipality and the utility prescribing a definite rate is usually held to be binding, except to the extent that it is subject to the sovereign power of the people of the state to regulate in the interest of all, and it may be set aside upon a finding that the rate prescribed therein is unreasonable. The issue would probably never arise if municipalities were ready to recognize the situation of the utility. No member of a city council wants to increase a rate any more than a member of a state commission wants to do it. And when a public utility feels that the mounting costs of operation keep it from doing business except at a loss or require it to do business at less than a favorable return and it is clearly hampered in its efforts to give adequate service, the members of the city's governing body are besieged by their constituents with appeals to vote against the increase. Human nature here is a factor. As in the case of members of the legislature, the city councilmen usually are not equipped to pass properly upon questions of valuation, nor have they the time to do it. It is logical that this authority should be vested in a body charged with this specific duty, equipped with the necessary engineering and accounting staff, and able and willing to render a fair and impartial judgment. "Home Rule" is an attractive phrase, but only until it is examined in light of the facts.

Service

In matters of service the powers of the commissions are wide. They may order railroad freight or passenger stations built or enlarged, require extensions of electric railway, gas, water or electric service, change schedules, order new plant and equipment to be installed, and in almost every direction see that the public is adequately served. Usually the utility representatives heartily co-operate in consideration of these subjects.

Public relations have been greatly developed by utilities and form an important part of their organi- to foster and encourage better relations between the public servant and the customer.
zation. Commissions can and often do a great deal

Of course, the utilities generally speaking nowadays favor regulation by commission, although a good many of them opposed this in the beginning. There is no secret about it. The utilities are in favor of commission regulation because they furnish the fairest means yet devised for the settlement of these questions. Certainly no utility any more than an individual wants his case submitted to a party to the controversy or to any body of men personally interested in the outcome. As Mr. Spurr remarks, the municipality is always a ratepayer and always represents the ratepayers and those who act for the city are always personally interested in the result and that it is as unfair to have these questions considered by the municipality as it would be unfair to have the rates fixed by the board of directors of the utility company. No one will claim that regulation in its present form is perfect, but it is the best we know.

Regulatory Commissions Facing Period of Greater Usefulness

So far as we can see, the regulatory commissions are facing a future of increased usefulness and of advancing responsibilities. It is the duty of the commission first of all to see that the public is adequately served. It is not my conception of the commission's duty to await the bringing of formal complaints, but to be on the alert to encourage the extension and perfection of service to meet the advancing demands of civilization. To do this it is essential that the utility be adequately financed, that it shall earn reasonable rates, that it be held to accountability for its responsibilities and that it should be protected from competition. If there is any one thing in my own experience as a commissioner in which I take special pride it is our constant insistence on economy and elimination of the waste resulting from competition, resulting in a situation where no two public utilities other than steam railroads in that state now duplicate service, with the single exception of two telephone companies in one small town, and I am sure that situation will shortly be cleared up. In fact, in most states no utility may start in business without a certificate from the commission that the public convenience and necessity require it.

Interest of Public and of Utility Identical

The commissions must always bear in mind that in the final analysis the interest of the public and the interest of the utility under proper regulation are identical. Neither the utility nor the public can be injured without involving injury to the other. Undoubtedly there is a tendency on the part of some commissions to follow strict judicial procedure. Sometimes this is absolutely necessary and yet it is my conviction, based upon experience, that 90 per cent of the disputes between utilities and their patrons can be settled across the table in informal conference if the parties can once be brought together.

The commission of the immediate future will recognize that there is in this age hardly a chance that any utility will put in effect an excessive, much less an extortionate rate. Post-war experiences have shown that relief in rate cases has often been inadequate and delayed.

Rates are much discussed everywhere, yet after all they are secondary to the matter of service. I am speaking of real service—not only the flow of gas at the turn of the tap every moment of the 24 hours and the 365¼ days, but the service that you will need one and two and three years hence. Above all, the commission of tomorrow will foster in every way a common plane of understanding between the utility and its patrons.

PROSPERITY IS ASSURED

(Continued from page 54)

Chief Source of Economic Unrest in 1925

The quest for this new balance of economic forces has been the principal source of economic unrest during the year 1925. It is responsible for the many discrepancies in the reports from the principal market centers which have proved so puzzling to all observers and which show a greater harmony now after the process is completed.

While the year 1925, therefore, has been a year of economic experimentation, 1926 will have to be one of consolidation. The new economic level once reached, efforts will have to be made to hold the newly gained position and to secure it against the dangers of renewed deflection in a downward direction.

Sketching the work ahead of us in rough lines, it will entail: (1) securing the present satisfactory balance of agricultural cost of production and price of agricultural products, (2) providing for merchandise that will meet the requirements of the consumer at a price leaving a sufficient profit to the manufacturer, and (3) supplying the required funds for a sound commercial credit reserve. None of these is impossible of accomplishment.

Agricultural Costs and Inefficiencies

More is known today about the intricacies of agricultural cost accounting than in the past and while until now the tendency has been to blame distribution for most of the ills of the farmer it becomes now increasingly clear that faulty agricultural production must carry at least part of the blame. With the facts available it should be possible to provide a sound equalization of production and consumption of agricultural products. As agriculture supplies a large part of the purchasing power of the country, it is only natural that the character and price of the industrial products offered to this market must suit the rural customer. It is only natural that industry will try to add somewhat to the price of industrial commodities in order to provide a better profit margin. This margin has been very low during the last years and certainly has not been always sufficient to permit operation upon sound economic lines.

Experience has shown that every increase in the cost of foodstuffs is soon followed by a similar rise in the industrial commodity market and there is no reason why this rule should not hold good under present conditions.

Higher prices with frequent changes must be expected during the next few months until a new balance has been obtained in the exchange value of food against the industrial product. This process of readjustment, however, cannot continue over an extensive period and should be terminated by the end of March. After that prices should continue to move upon fairly steady levels.

Banks Must Aid

It will be the duty of the banks to aid this process by arranging their credit facilities in such a manner as to facilitate the rapid exchange of merchandise and foodstuffs. As the period of stress will be a short one only, there is no danger either of financial inflation or a money shortage. Spring should see normal conditions established all over the market.

The past year has not been a good one for the foundation of new enterprises. On the contrary, there has been considerable contraction and a high rate of business mortality. The general improvement of the situation will be accompanied by a general revival of business enterprise, with a danger of multiplication of competition. It is not quite clear whether the time is ripe for such a development until the market has shown clearly that it can support an expansion of the existing industrial facilities. Notice in this respect must be taken of the increasing tendency of industrial decentralization and especially the growth of industrial enterprise in smaller communities, which until now were not thought favorable for such a purpose. This is not an entirely new development in American industrial life, but must be regarded more or less as a reverse type. It is bound to play a considerable part in the immediate future of American industrial production.

THE LOW TEMPERATURE CARBONIZATION OF COAL

(Continued from page 50)

air at temperatures of from 450 to 700 degrees C., as distinguished from the usual high-temperature carbonization at temperatures of 900 to 1,200 degrees C. The aim is to keep the temperature low enough to prevent the decomposition, as far as possible, of the primary tar, and thus obtain the maximum yield of liquid products. At 450 to 500 degrees C. the tar yield is from two to three times that of the ordinary high-temperature coking or gas-making process.

Aims of Low-Temperature Carbonization

The reasons for the many attempts to devise commercial low-temperature processes are the following:

1. To obtain a larger yield of liquid fuels that can be obtained from high-temperature processes.
2. To provide a smokeless, easily ignitable solid fuel for domestic purposes.
3. To obtain a dry, easily pulverized, highly combustible, low-volatile material for pulverized fuel furnaces, with coincident by-product recovery.
4. To obtain a substitute for low-volatile semi-bituminous coal, for mixing with high-volatile swelling coals in order to make a suitable dense metallurgical coke.

One Common to All

Of these four objectives, the one common to all low-temperature processes is the increased oil or tar yield. Liquid fuel, especially gasoline, seems essential for the continuation of our present highly developed system of automotive transportation. Petroleum resources underground are much more limited than coal, and may be virtually exhausted in this country in a generation, hence the interest in any methods for obtaining this convenient form of fuel from our very much larger supply of solid fuel. European countries which have no internal petroleum resources have a particularly keen interest in this problem, because of the need of a home source of petroleum substitutes in case of being shut off from foreign supplies during an extended war. England felt this need during the last war to such an extent that the Government established a Fuel Research Station which has for its principal problem the development of a commercially feasible low-temperature process. Germany actually did install and operate a number of low-temperature carbonization plants during the latter years of the war.

There is in England a second objective almost as important as the first one—namely, the manufacture of an easily ignited smokeless fuel for use in open grate fires. The Englishman must have his cheerful open grate, despite its low efficiency and the pall of smoke created by thousands of soft coal fires. Abatement of this domestic source of smoke by providing a suitable smokeless fuel was the principal object of the early experiments before the war in England.

In Germany and in France low-temperature carbonization research is directed principally for the production of gasoline and fuel-oil substitutes, and for manufacturing a low-volatile semi-coke for mixing with high-volatile gas coals to produce dense metallurgical coke. There is but little interest at the present time in a smokeless domestic fuel. German engineers are investigating the possibilities of combining low-temperature carbonization with powdered fuel-firing or burning the semi-coke on chain-grate stokers in large central power plants.

Considerable attention has also been given to combining low-temperature distillation followed by complete gasification of the semi-coke in by-product gas producers.

Methods of Heating

The fundamental difficulty in carbonizing coal at low temperatures is in transferring heat to the coal in a reasonable time when using a relatively low-

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temperature gradient. Coal is a poor conductor of heat. It takes much longer to transfer the necessary amount of heat through a given volume of coal when the retort walls are at a temperature of 500 degrees C. than when they are at 1200 degrees, as in the usual high-temperature process. Since the cost of the operation depends largely upon the installation charges per ton of coal carbonized, it becomes necessary to accelerate the rate of carbonization, either by spreading the crushed coal in a thin layer on a heated surface or by agitating the coal, bringing fresh portions continually in contact with the heated walls or by passing large volumes of hot producer gas, products of combustion, or superheated steam through the mass of broken coal.

Differentiation on Basis of Heating

Differentiating on the basis of method of heating, the various processes fall into two classes—namely, (1) externally heated retorts, in which the coal to be carbonized is supplied with heat through the walls of the retort and in which the products of distillation are not diluted with flue gases; and (2) internally heated retorts in which the coal to be carbonized is heated by direct contact with hot gases, or superheated steam which is passed through the retort in intimate contact with the charge.

Carbonization processes may be intermittent, in which the coal is charged into an empty retort and remains there until distillation is completed, when the entire mass of coke or residue is discharged at one time, or they may be continuous, in which charging and discharging is continuous or in small increments.

Present high-temperature by-product coking practice is intermittent, as intermittent processes generally produce firm and lumpy coke. Continuous vertical retorts are coming into considerable use in the gas-making industry as continuous processes favor larger outputs and cheaper operation; the coke, however, has somewhat inferior physical properties to that produced by intermittently charged retorts.

With respect to the style of construction, retorts may be classified as follows: (1) Oven types, usually of rectangular shape, as the standard by-product oven; (2) vertical shaft types, as in the vertical gas retorts or the Scottish oil-shale retort; and (3) cylinder types, vertical, horizontal or inclined, similar to revolving driers or cement kilns; the cylinder type may also be stationary, with a revolving internal stirrer.

A convenient classification for the many proposed processes is given in Table 1.

Table 1—Classification of Low-Temperature Carbonization Systems

A. Externally heated retorts; coal in thin layers not stirred.
   1. Vertical layers of coal in narrow retorts.
   2. Horizontal thin layers of coal.

B. Externally heated retorts; coal stirred in contact with heated surfaces.
   1. Vertical retorts.
   2. Horizontal retorts.
      a. Stationary retorts with internal stirrers.
      b. Rotating cylinders.
   3. Retorts with coal stirred on a flat heated surface.

C. Internally heated retorts; coal in direct contact with hot gases or liquids.
   1. Hot gases generated by air or air and steam blown into the retort.
      a. Coal charged in lumps or briquets.
      b. Coal charged in pulverized form.
      c. Complete gasification.
   2. Hot gases or vapors generated outside the retort.
      a. Combustion products.
      b. Producer gas.
      c. Water gas.
      d. Coal gas.
      e. Superheated steam.
      f. Combinations of above.
   3. Melted lead in contact with coal.

D. Two-stage carbonization, to control the sticking properties of coal.

Only a few of the better known processes of some of the various types can be briefly described in the time allotted for this lecture.

(Editor's Note: This is the first installment of a lecture delivered by Mr. Fieldner at the Johns Hopkins University. Further installments will follow in subsequent issues of The Journal.)

FIND GAS A SOURCE OF NEW ANESTHETIC

The manufactured gas industry has recently added to its list a new form of human service having nothing to do with heat, according to medical reports.

The latest use for gas is in the production of propylene, a constituent of manufactured gas, and now found to be a potent and valuable anesthetic for the alleviation of suffering.

Ethylene, a chemical cousin of propylene, and also made from gas, has been used for years by dentists and for minor surgical work. Propylene, the new anesthetic, is twice as powerful as ethylene, and is already being successfully used in major operations. Because of its strength, more oxygen can be administered to the patient during its application, and recovery from it is said to be swift.

Consciousness returns in approximately one minute after the flow of propylene has been stopped, and in 15 applications reported by Dr. Lloyd Riggs and Dr. H. B. Goulden of New Brunswick, N. J., the sensation of nausea was felt by only one patient.

Elaborate experiments with propylene are being conducted to determine its full usefulness.

Why Not?

Many reasons why you should

J. B. Dillon

The year of 1926 is yet young. What will the harvest be? That cannot be answered by you or me, but, instead of worrying as to the answer, would it not be best to placard the words of Ruckert:

"Six words there are that plead with me each day,
I ought, I must, I can, I will, I dare, I may."

Now that they are placarded, let us act accordingly if we are interested in better and bigger business, and surely all of us have that hope and desire.

"I ought." Yes, we ought to get busy and meet the progressive and highly competitive conditions. We "must," if we hope to hold our own. That we "can" at least try, and when we say "I will" and "I dare" we know that we "may" accomplish far greater than if we had just waited and wondered what we should do to better conditions.

Advertise, and Keep At It

Advertise, and keep at it. Study your stock so that you can explain it and you will have a more distinct pleasure in handling it, for with a knowledge of things comes pleasure.

Are you quite sure that your sales rooms are clean and inviting?

It may be all right to go into an antique shop and find dust on some of the Sheratons, the Rembrandts, etc., and be told: "Ah, my friend, I dare not touch so sacred a thing, I might scratch it," the answer being: "Ah, piffle." But folks who buy these "sacred things" would utter an Amen, finding a dealer was so careful of these relics, but we are selling gas ranges and other gas utensils and if any of them won't stand a scratch and still be fine and dandy the writer has never heard of them. Still, we are not supposed to scratch new goods, nor will we in a common sense effort to keep them clean.

Appearance of the Store Important

"Clothes do not make the man," but they certainly cause people to take a second look at the wearer, therefore the store which has an appearance which will cause folks to appreciate it will cause folks to buy therein. These things done, do not forget to read your trade journal and see what the other dealers are doing to carry out what you are doing, and do not forget that among the advertisements you may find many excellent pointers how to carry out your own intentions and reasons why you ought to augment your stock by such and such to make your house one of real merit, one of those which will go forth and spread your resourcefulness. But friend Rickert warns:

"In every life an impulse lies
To sink or rise too high;
He who can keep a middle course
We praise most heartily."

All of which we interpret, in the present case, to mean—let's get our share and make it such as will be sustaining and worry not that we do not get it all, because that never was intended by Fate, or whatver you care to call that unseen Power of Destiny.

7,000,000 OWN SECURITIES OF PUBLIC UTILITIES IN U. S.—INVESTMENT $20,000,000,000

Public Service Information Committee Figures Show One American in Fifteen Is Direct Owner of Stocks or Bonds of Public Service Companies

More than 7,000,000 individuals hold the securities of the public service companies in the United States, according to statistics just brought up to date by the Pennsylvania Public Service Information Committee. That does not include water companies, the figures relating to which are not yet complete.

The estimate is based on direct investments. Insurance companies and banks with 28,000,000 depositors also hold public utility securities.

Exclusive of steam railroads, it is estimated that the total investment in the public utility industry in America now is in excess of $20,000,000,000.

The telephone business is the largest retail business in the United States, handling 50,000,000 transactions every 24 hours.

These transactions involve the operation of 16,300,000 telephones doing business at a profit of less than one cent a day for each phone, according to Walter S. Gifford, president of the American Telephone and Telegraph Company.

This small margin of profit is applied to a business so extensive that it supports an investment of nearly three billions of dollars, and with more than 370,000 stockholders. The Bell Telephone Company of Pennsylvania has about 60,000 stockholders.

A recent investigation made by the American Electric Railway Association indicates that the securities of the various electric lines in the United States are held by nearly 1,300,000 people. This estimate is based on reports from a group of companies having securities outstanding to the amount of $2,084,000,000. Some of these companies, however, were doing a combined railway and power business, so that the security holders could not be divided into two groups.

The gas industry, begun in this country when Baltimore streets were first illuminated by gas in 1816, has spread until now the nation's various gas companies have approximately 1,000,000 security holders in a business which today represents an investment of over four billions of dollars.

While used originally for illuminating purposes, the source of greatest business volume for the gas companies today is found in the commercial world.

NEWS OF THE GAS INDUSTRY

Increasing Gas Sales Per Meter in Winter

First 1926 Meeting Gas Sales Association of N. E. Well Attended

The first meeting of the Gas Sales Association of New England for the year 1926 was held at the Boston City Club on Friday, January 8, 1926, with 200 members and guests present.

The subject of increased gas sales during the winter months is of such vital importance to all gas companies that one of the largest attendances of members was on hand when past Governor Woodhead of the association arose to speak.

Mr. Woodhead, in opening his remarks emphasized the six important points in increasing the gas sales per meter in the winter months, which are:

1. Public Relations.
2. Attention to new homes being built.
3. Garage Heaters.
4. Water Heaters.
5. Gas Ranges.
6. Gas Heaters.

In the course of his talk Mr. Woodhead took up each point separately in bringing out his points. He said, in part:

Public Relations

"Let us take the first and most important point, and that is Public Relations. In talking to you about Public Relations, I am going to talk with you about the direct contacts of the company, and not as executives. I am going to try to point out to you some of the things we have got to try and get our men to do as the direct contact between the company and the customer.

"After all, if the company can't get the employees to absorb this idea of Good Public Relations and can't point out of what advantage it is to the employee, of what value is it? What value is it for a company to talk about Public Relations unless the attitude of the company to its employees is right? The company must deal with the employees on the same basis as the executives of that company would like to be dealt with.

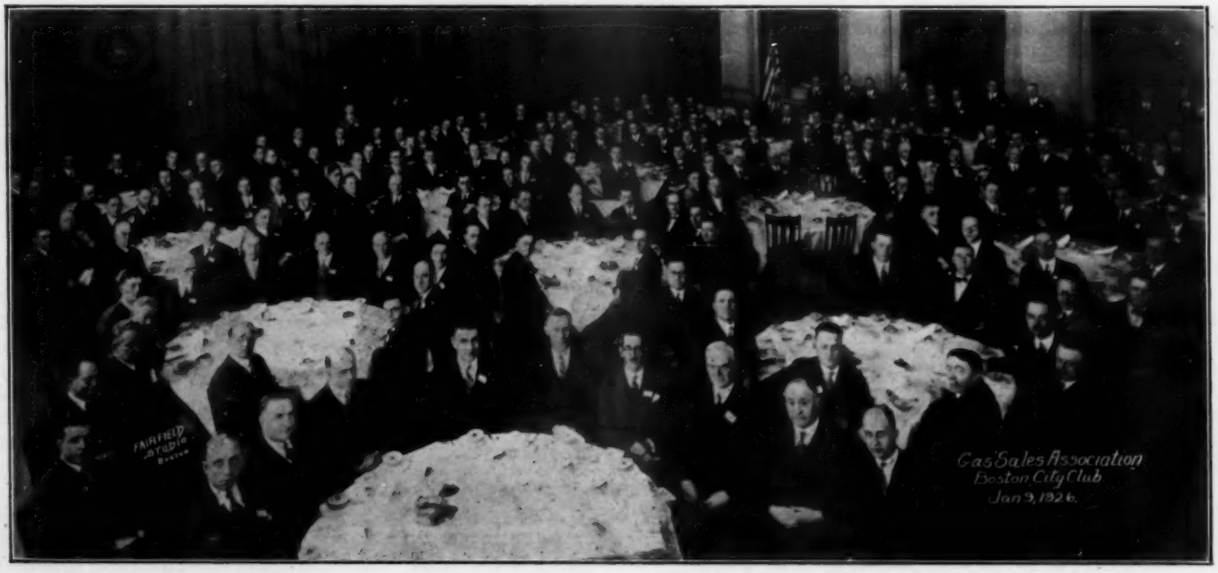
"Of what advantage is it to the salesmen of the utility company to take any interest in public relations? You sell the goods, you get paid a commission or a salary.

"There is one big reason why every employee should be interested in Good Public Relations. You have all probably had times when you felt like criticising the company. The more prosperous a company is the more it can afford to do. If you can bring business to the company and the company becomes prosperous, they will accept your ideas and do a lot for you. You will get more if you work for a company that feels it is prosperous. It is up to you to do your part.

Good Will Pays

"We believe that good will pays. We are in a peculiar situation in our territory. We are surrounded by different gas companies whose rates are: $1.15 per M., $1.25 per M., $0.15 first 1,400 cubic feet, $0.12½ for next cubic feet, $1.50 our gas rate.

"A utility is a monopoly, but it is in competition by what the other



utility companies adjacent to it are doing. The people in our territory must feel that they are getting some benefit from the service or they would question the rate. We believe that Good Will has something to do with it, as our rates for a metropolitan district are not low.

The Salesman a Good Will Builder

"The salesman has a wonderful opportunity in building up good will for the utility company. He is the direct representative of the company to the customer.

"There are several things that go to make a salesman a real representative and a credit to the gas company and which every salesman should recognize.

"First, personal appearance. Clothes, if you want to say it. I think there is nothing that will subject a man to more criticism than getting himself into a position of not being accepted into a customer's house as even a salesman or a representative of the company. Our territory is a very high grade territory. We like to have our men appear so that they will be received at the front door.

"A salesman does not have to have elaborate clothes to present a good appearance. His finger nails should be clean, he should have clean hands and a pleasing personal appearance. The use of good language is also an important point. Your language is a subject of a good deal of criticism when you are not around, and nobody can excuse himself for the improper use of the English language, with correspondence schools and the various evening schools which are available.

The Importance of Correspondence

"One point that seems to be dwelt on very little is the subject of correspondence. You men have correspondence turned over to you from customers, how do you handle it?

"No letter should come in any office unless it is acknowledged. The customer takes the trouble to write a letter to the company and he is certainly entitled to the courtesy of a reply. Those of you who are inclined to write hasty correspondence I would suggest that after writing the letter you allow it to rest for 24 hours.

New Houses

"We have in recent years added quite a number of new houses in our territory. We have not had any gas lighting. While new construction is good business, yet from the company's standpoint there is a certain amount of expenses in connection therewith. New houses and new construction usually mean main extension, so it has to be approached with a certain degree of reasoning.

"We have tried in the way of new construction to have our men keep in touch with the local newspaper, find out who is the owner of certain new houses and approach the owner with the idea of getting gas service into the building. The salesman who is on the job will keep in touch with new construction, but don't get a house a mile beyond the main. He wants to look for a house that can be reached within reason. We make main extensions. When a main extension is asked for, we make an estimate of the cost and we figure a return on that of 8 per cent. Then we make an estimate of what our gross revenue is going to be and from that we can determine our net, then we know if we can make a main extension which will be profitable to the gas company. If the cost seems unreasonable, we stay away from it.

Free Piping

"We have been very successful in obtaining gas service in new houses. We give the builder 25 feet of service pipe inside the property line, if he will put in from four to eight outlets. For obtaining these outlets we give the salesman 20 cents on each outlet obtained. This has been good business for us, as during the year 1924 we put in 2,369 outlets and in 1925 2,358 outlets. There is a wonderful possibility in these outlets. Outlets in bath room, dining room, living room and kitchen are the good ones. New houses are always a good prospect for high grade equipment.

Garage Heaters

"We were the first gas company in New England to use garage heaters. We have now on our lines about 150 of these heaters and we notice the consumption, particularly on a cold day. It is the best possible type of business you can get. It is business at your present rate being used at a time when there is very little demand for your service. These heaters are usually lighted about 8 or 9 o'clock at night and burned all night. The cost of operation for a two-car garage heater at $1.50 per thousand cubic feet runs from $8 to $10 per month under thermostat control.

Water Heating

"We have a unique method of giving water heating advice. We give advice on water heating either by coal, gas, electricity or oil. We lay the facts before them and we try not to be prejudiced in favor of any one system. We would rather have a satisfied customer pay us $8 per month and use some coal than to have an all-gas customer pay us $16 every month and each time he comes into the office with a grouch on and wish there was something else he could use instead of gas.

"Good water heater systems tend to all year usage. If a customer is satisfied with his hot water service he is going to use more of it.

Electric Range Competition

"Don't let the electric range be any bugaboo to you. The electric company in our territory is not making any headway. Give the people the facts; that is all the customer needs. I call your attention to the booklet published on this subject by Prof. Wyer of the Smithsonian Institute. We have obtained several of these pamphlets and mail them to customers who seem to be wavering between the gas range and the electric range and the result has been in our favor.

Gas Heaters

"We have sold quite a few of these portable room heaters in our territory and we feel the effect of them in our output, particularly on a cold day. Particularly was this noticeable on the Sunday after Christmas, when our output jumped considerably. This was due no doubt to the use of room heaters and we know there are a lot of room heaters on our lines which have not been purchased through our company.

"We feel that our answer to this quesion: 'Can gas sales be increased during the winter months?' is, they can be, but what are you going to do about it? The thing to do is to leave here tonight and convince yourself that you can prove to your company that you can get the business which will build up that winter output. Survey your own territory. Interview your bakeries, restaurants —these establishments always need gas consuming appliances."

Conclusion

In closing, Mr. Woodhead stated that on every appliance which goes out from his company there is placed thereon a little tag which reads as follows: "The sale of this appliance is not considered complete unless you are satisfied with it. If there is anything unsatisfactory please write or telephone us." The use of this card has been commented upon very favorably by a great many customers of the Arlington Gas Light Company.

Mr. Woodhead during the course of his remarks stated that he believed that there was a wonderful opportunity for the gas range manufacturer to put on the market some form of gas range which would throw radiant heat. Particularly in the morning, when the other means of heating are low, a radiant heat from a gas range would be in great demand.

New England Industrial Men Hold First 1926 Meeting

Discuss Warm Air Furnace Heat ing

The attendance at the meeting of the Industrial Gas Association of New England, held at the Boston City Club on Friday, January 8, 1926, at 2:30 p. m., was so great that it was apparent that it will be necessary before long to hold these meetings in a larger room. The prospects look good for this meeting to be one with the largest attendance of any held on the second Friday of the month in Boston.

President E. L. Woods announced that there would be no meeting in February on account of the New England convention, but that the organization would be represented on the program by a paper on house heating, to be presented by J. J. Winn. He said that he had received a letter from Mr. Tudbury, the secretary of the New England Association of Gas Engineers, asking that a member of the association be appointed on the committee arranging for ladies' night at the convention and Frank F. Capen was appointed to serve on this committee.

An amendment to the constitution which would limit membership to those only who are employed by gas companies was discussed and it was finally voted to take no action on it.

The speaker at this meeting was A. W. Lordahl of the gas furnace department of the Columbus Heating and Ventilating Company, Columbus, Ohio, who spoke on the subject of warm air heating.

New Rates for Adirondack Company Approved

Albany, N. Y.—The Public Service Commission has approved a new rate of the Adirondack Power & Light Corp. on gas service supplied in the city of Glens Falls, village of Fort Edward, Hudson Falls and South Glens Falls and towns of Fort Edward, Kingsbury, Moreau and Queensbury, schedule filed to become effective January 1, 1926, providing rates as follows for use of service for residence heating: For the first 250 cu. ft. of gas used per month per 1,000 cu. ft. of building volume, $2.15 per M. cu. ft.; for the first 20,000 cu. ft. in excess of that paid for on building volume basis, 85 cents per M. cu. ft.; for additional use per month, 80 cents per M. cu. ft. Present rates are, for the first 400 cu. ft. of gas used per 1,000 cu. ft. of building volume, $2.15 per M. cu. ft.; for the first 5,000 cu. ft. in excess of that paid for on building volume basis, $1.25 per M. cu. ft.; for the next 5,000 cu. ft., $1 per M. cu. ft. For additional use per month, 80 cents per M. cu. ft. Minimum monthly charge will be computed for use of 500 (at present 400) cu. ft. of gas for each 1,000 cu. ft. of building volume.

C. Bollinger Appointed Supt., N. Y. Factory American Meter Co.

Charles Bollinger, for many years in charge of field construction for D. McDonald & Co., Albany, N. Y., has been appointed superintendent of the New York factory of the American Meter Co.

N. Y. Assembly Committee on Public Service Organized

Albany, N. Y.—There are five new members of the Committee on Public Service, as announced by Joseph A. McGinnies, Speaker of the Assembly. James M. Hackett, Republican, lawyer of Poughkeepsie, now serving his fifth term in the Legislature, succeeds Yale of Putnam, deceased, who for many years was chairman of this all important committee. Mead of Orange and Dayton of Kings county, Republicans, were not returned this year, while Whitcomb of Broome was placed on other committees.

Mr. Dominick of Orange county succeeds Mr. Mead and Mr. Stephens of Putnam, the new member in place of Mr. Yale, is given a place on the committee. Winters, of Schuyler, is also a new Republican member. Of the three Democrats on the committee, Brunner of Queens remains, Reilly of Brooklyn succeeds Frank A. Taylor, who was elected sheriff of Kings county. Dinneen of New York succeeds Nugent of New York.

Other members of the committee are Hall of Niagara, Sprague of Erie, Catchpole of Ontario, Pammenter of Monroe and Grenthal of New York, Republicans.

Oklahoma G. & E. Announces Changes in Personnel

Chicago, Ill.—J. F. Owens, vice-president and general manager of the Oklahoma Gas & Electric Co., announces the appointment of N. I. Garrison as assistant to Frank J. Meyer, assistant to the general manager, in charge of operation, with headquarters at Oklahoma City. For the last year and a half Mr. Garrison has been manager of the Southern division of the company, with headquarters at Ada, Oklahoma.

When the Byllesby organization acquired control of the Fort Smith Light & Traction Co. in 1904, Mr. Garrison was appointed auditor of that company. In 1917 he was appointed manager of the Oklahoma Gas & Electric Co. division at El Reno, remaining there until his transfer to Ada in 1924.

Roy D. Weldy, present manager at Wewoka, succeeds Mr. Garrison as manager of the Southern division at Ada. He has been in the employ of the Oklahoma company for the past five years.

Mr. Owens' announcement carries the further information that R. F. Danner has been promoted from the position of assistant general superintendent of the company to that of general superintendent.

Gas Plant for Fort Lauderdale, Florida

The Fort Lauderdale, Florida, Gas Company is building a gas plant in Fort Lauderdale, Florida, to furnish gas for that city as well as for Hollywood. These cities are located between Palm Beach and Miami and have a population of about 35,000 people.

The Central Foundry Company is furnishing the Universal pipe for the system of mains. The Stacey Manufacturing Company is building the holder and oil storage tanks, and the Aetna Iron & Steel Company of Jacksonville, Fla., is constructing the buildings. The plant is expected to start operation at the end of March.

Gas Heating Appliances at the Leipzig Trade Fair

Everyone interested in the manufacture, use or sale of gas heating appliances will find in this division of the Leipzig Trade Fair an exhibition unequalled either in extent or completeness.

The Leipzig Trade Fair (an international institution) is held twice annually. The duration is from February 28 to March 6; the Technical Fair extends to March 10.

The exhibition grounds of the Leipzig Technical Fair cover an area of 3,866,000 square feet. Thirteen large exhibition halls serve for the purpose of displaying the latest achievements in the technical branches.

All industries producing raw material, semi-finished and finished products, are represented. All exhibits are specialized; that is, there are special exhibits of woodworking machinery, iron-working machinery, electro-technical machinery and appliances, each forming a special exhibit in itself.

In the division of gas heating appliances practically every known gas heating device is shown. From small single burners for shop and laboratory use, the exhibits embrace huge ovens, forges, gas furnaces, house heating, water heating and cooking devices.

Many new features and recent patented appliances are on display.

Compared with the high quality of the merchandise, the German prices for gas heaters are low. Prices are staple and delivery terms are strictly adhered to.

The number of exhibitors at the Technical Fair held in the spring of 1925 was 2,494.

The Leipzig Trade Fair dates back to 1268. Thousands upon thousands of business men from all parts of the world have profited by their visits to the fair, as it is the best channel for forming foreign buying and selling connections.

Commercial Gas Managers of N. E. Listen to Paper on Incineration

First 1926 Meeting Well Attended in Boston

There was a record attendance at the meeting of the New England Association of Commercial Gas Managers, held at 12:30 at the Boston City Club, January 8, 1926. Mr. J. B. Prescott read a paper on "Incineration," barely touching upon his own machine, the Pyrofuse, but dealing with the subject in a broad and comprehensive manner. As a matter of fact, this is one of, if not the very best, papers ever presented before this association.

President Capen announced that the next meeting would be held on February 23 at the Hotel Somerset, that is, the day before the opening of the New England Convention of Gas Engineers. At that time the annual election of officers will take place and a nominating committee was appointed to bring in nominations.

Reliable Stove Co., Chicago, Office Damaged by Fire

On Wednesday, January 6, the Chicago offices and salesroom of the Reliable Stove Company Division, at 315-317 South Wabash avenue, were partly destroyed by fire, which caused a loss of about $175,000 to the tenants of the building.

The premises occupied by the Reliable Stove Company Division were only damaged by smoke and water and they will remain at their present location and are doing business in the old place the same as heretofore.

The stock of appliances carried in the large warehouse at Harvey, Illinois, is intact, and they are in position to fill orders promptly.

Meritorious Service Medal Award for 1925

The American Gas Association has broadcasted a notice regarding the next award of the American Gas Association Meritorious Medal, to be made for the most meritorious deed performed within the industry during the calendar year 1925. Attention is called to the fact that applications must be received at the association headquarters on or before March 1, 1926. The form on which such applications must be made, as well as the conditions governing the award, can be obtained by application to the association.

Employees Given Insurance Policies

The Midland Utilities Co., with the Northern Indiana Gas & Electric Co., Indiana Service Corporation, Gary Railway Co., West Ohio Gas Co. and the Calumet Gas & Electric Co., as its subsidiaries, about 3,500 employees were given life insurance policies totaling more than $3,500,000, as Christmas gifts. All employees who have served six months or longer participated. The minimum was $500 and the maximum $1,500. For adults this is the greatest and most wonderful thing it is possible to give.

Tampa Gas Company Growing

Tampa, Fla.—Evidence of the substantial growth of Tampa is given by record of the growth of the Tampa Gas Company. These records show that there was a net gain of 730 new consumers of gas in Novemebr.

For the same period the sales of gas ranges and fireplace heaters amounted to $76,000.

The additional consumers put on the books last month was "more than the gas company had at the end of the first 10 years of operation," Rosco Nettles, manager-secretary of the company, said. The sales from ranges and heaters last month was above the entire receipts from gas sales in 1907, he added, after the company had been in operation 12 years.

Gas Company Gains by Aggressive Advertising

One of the best examples of what an aggressive advertising policy, paving the way for the activities of earnest salesmen, will do for the manufactured gas business, is given by the Atlantic, Ia., gas property. Atlantic had a small plant, giving limited service, owned by operators who did not have the advantage of connection with a large operating company. Its resources were limited and it could not command the capital to expand.

In February of this year, 1925, the property was acquired by the Iowa Electric Company of Cedar Rapids, which operates many gas and electric properties throughout the State.

The new company immediately started extensions of mains, began advertising its appliances and service continuously in the local daily newspaper and put an aggressive sales force to work.

The result in nine months' time (February to November, 1925):

Increased number of customers, 35 per cent.

Increased daily production, 172 per cent.

Increased miles of mains, 66 per cent.

Increased number of ranges in use, 27 per cent.

Increased water heaters in use, 122 per cent.

Increased cookers and plates, 33 per cent.

Increased laundry appliances, 300 per cent.

Increased industrial appliances, 166 per cent.

The Atlantic News-Telegraph, which has not been unfriendly to the municipal electric project, calls attention to the difference between the policy of municipally and privately owned establishments editorially, pointing out how the gas company is getting business away from the electric company, which the municipal project could retain if it had a modern business policy.

L. J. Willien Resigns from Tenney & Company

L. J. Willien, well-known gas engineer, has resigned from the Charles H. Tenney & Co., Boston, Mass. He will join the H. M. Byllesby Engineering and Management Corporation as gas engineer, taking up his duties between February 1 and February 15.

H. L. Jackman Assistant Manager Western States Gas Co.

H. L. Jackman, manager of the Eureka division, Western States Gas & Electric Company, has been appointed assistant to H. H. Jones, newly-elected vice-president and general manager of the company. In addition to his duties as assistant general manager of the entire company, Mr. Jackman will continue in his position as manager of the Eureka division.

Gas Plant Purchase Authorized

Albany, N. Y.—The Public Service Commission has authorized Arthur E. Yahn to transfer his natural gas plant in the village of Bolivar, Allegheny county, to the Producers Gas Company. The case is continued on the records of the Commission until an examination is made of the property by the Commission's engineers and accountants to determine the valuation.

Northwest Gas & Electric Equipment Co. Announces Personnel Changes

Robert S. Felton has been appointed San Francisco representative for the Northwest Gas & Electric Equipment Co., succeeding J. P. Miller, who has resigned. Mr. Felton was formerly connected with the Los Angeles office of the same company.

Guy R. Kendall, for the past four years Southern California representative of the Northwest Gas & Electric Equipment Co., has been appointed assistant to the president of the company, with headquarters in Los Angeles.

Contracts Awarded

The Gas Machinery Co. of Cleveland, Ohio, has been awarded a contract by the Jacksonville Gas Co. of Jacksonville, Fla., for a new nine-foot carburetted water gas equipment, complete with operating floor and automatic control.

The contract also includes a hydraulic system for operating the hydraulic equipment, blowing equipment, blast piping, two condensers, exhauster and tar washer.

The above equipment will be connected by overhead steel as well as underground cast iron yard piping and the new, as well as the old blast apparatus, is to be installed in a special design of blower room to minimize noise.

The Gas Machinery Company of Cleveland, O., is furnishing the New York State Gas and Electric Corporation of Oneonta, N. Y., with two new overhead purifiers on beams and columns.

The purifiers are complete with valves, connections and oxide elevator and are of the outdoor type.

The work also includes some larger connections on the 5-foot water gas set furnished by the Gas Machinery Company several years ago.

Cheyenne Promised Natural Gas

Denver, Col.—The Public Service Company of Colorado has surveyed the route between the gas fields of northern Colorado and the city of Cheyenne, Wyoming, about 30 miles, and as soon as the frost gets out of the ground a gas pipe line will be laid and the capital city of Wyoming will be served with natural gas.

The Building of the U. G. I. Co. of Philadelphia, as It Will Look When Completed